



UNITED STATES DEPARTMENT OF COMMERCE  
Patent and Trademark Office

NOTICE OF ALLOWANCE AND ISSUE FEE DUE

1M21/1116

ANTON KAGAN  
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LOWELL MA 01854

APPLICATION NO.	FILING DATE	TOTAL CLAIMS	EXAMINER AND GROUP ART UNIT	DATE MAILED
08/872,499	06/09/97	011	BUSHEY, C	1724 11/16/98
First Named Applicant	KAGAN,	35 USC 154(b) term ext.	=	0 Days.

TITLE OF INVENTION FAN FILTER WITH FASTERNING MEANS

ATTY'S DOCKET NO.	CLASS-SUBCLASS	BATCH NO.	APPLN. TYPE	SMALL ENTITY	FEES DUE	DATE DUE
1	055-385.100	Z99	UTILITY	YES	\$605.00	02/16/99

**THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT.**  
**PROSECUTION ON THE MERITS IS CLOSED.**

**THE ISSUE FEE MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED.**

**HOW TO RESPOND TO THIS NOTICE:**

I. Review the SMALL ENTITY status shown above.

If the SMALL ENTITY is shown as YES, verify your current SMALL ENTITY status:

- A. If the status is changed, pay twice the amount of the FEE DUE shown above and notify the Patent and Trademark Office of the change in status, or
- B. If the status is the same, pay the FEE DUE shown above.

If the SMALL ENTITY is shown as NO:

- A. Pay FEE DUE shown above, or

- B. File verified statement of Small Entity Status before, or with, payment of 1/2 the FEE DUE shown above.

II. Part B-Issue Fee Transmittal should be completed and returned to the Patent and Trademark Office (PTO) with your ISSUE FEE. Even if the ISSUE FEE has already been paid by charge to deposit account, Part B Issue Fee Transmittal should be completed and returned. If you are charging the ISSUE FEE to your deposit account, section "4b" of Part B-Issue Fee Transmittal should be completed and an extra copy of the form should be submitted.

III. All communications regarding this application must give application number and batch number.  
Please direct all communications prior to issuance to Box ISSUE FEE unless advised to the contrary.

**IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.**



## UNITED STATES DEPARTMENT OF COMMERCE

## Patent and Trademark Office

Address: COMMISSIONER OF PATENTS AND TRADEMARKS  
Washington, D.C. 20231

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
08/972,499	06/09/97	KAGAN	

IM21/1116

EXAMINER

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735 BROADWAY SUITE 1 # 222  
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BUSHLEY, C

ART UNIT	PAPER NUMBER
1724	8/a

DATE MAILED:

11/16/98

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

RECEIVED  
U.S. PATENT AND TRADEMARK OFFICE  
NOV 16 1998

<b>Notice of Allowability</b>	Application No. <b>08/872,499</b>	Applicant(s) <b>KAGAN</b>
	Examiner <b>Scott Bushey</b>	Group Art Unit <b>1724</b>

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance and Issue Fee Due or other appropriate communication will be mailed in due course.

This communication is responsive to applicant's election filed 9-2-98

The allowed claim(s) is/are 14-24 (renumbered as 1-11, respectively)

The drawings filed on \_\_\_\_\_ are acceptable.

Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

All  Some\*  None of the CERTIFIED copies of the priority documents have been

received.

received in Application No. (Series Code/Serial Number) \_\_\_\_\_.

received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\*Certified copies not received: \_\_\_\_\_.

Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

A SHORTENED STATUTORY PERIOD FOR RESPONSE to comply with the requirements noted below is set to EXPIRE THREE MONTHS FROM THE "DATE MAILED" of this Office action. Failure to timely comply will result in ABANDONMENT of this application. Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL APPLICATION, PTO-152, which discloses that the oath or declaration is deficient. A SUBSTITUTE OATH OR DECLARATION IS REQUIRED.

Applicant MUST submit NEW FORMAL DRAWINGS

because the originally filed drawings were declared by applicant to be informal.

including changes required by the Notice of Draftsperson's Patent Drawing Review, PTO-948, attached hereto or to Paper No. 4.

including changes required by the proposed drawing correction filed on Jul 15, 1998, which has been approved by the examiner.

including changes required by the attached Examiner's Amendment/Comment.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the reverse side of the drawings. The drawings should be filed as a separate paper with a transmittal letter addressed to the Official Draftsperson.

Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Any response to this letter should include, in the upper right hand corner, the APPLICATION NUMBER (SERIES CODE/SERIAL NUMBER). If applicant has received a Notice of Allowance and Issue Fee Due, the ISSUE BATCH NUMBER and DATE of the NOTICE OF ALLOWANCE should also be included.

**Attachment(s)**

Notice of References Cited, PTO-892

Information Disclosure Statement(s), PTO-1449, Paper No(s). \_\_\_\_\_

Notice of Draftsperson's Patent Drawing Review, PTO-948

Notice of Informal Patent Application, PTO-152

Interview Summary, PTO-413

Examiner's Amendment/Comment

Examiner's Comment Regarding Requirement for Deposit of Biological Material

Examiner's Statement of Reasons for Allowance

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### **EXAMINER'S AMENDMENT**

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

2. In view of applicant's status as a pro-se applicant (one who prosecutes his own application without the assistance of a registered patent attorney or agent), the Examiner in charge of this application has made the following changes to the language of the application in order to place the application in complete condition for allowance and issuance as a U.S. Patent. The application has been amended as follows:

In the Specification:

Page 7, line 12, "devises" has been replaced by --devices--.

Page 11, line 5, "Fig. is" has been replaced by --Fig. 1 is--.

Page 11, lines 15, 17, and 24, "mean" has been made plural.

Page 12, lines 2, 5, 8, and 10, "mean" has been made plural.

Page 12, line 13, a period has been inserted after handling.

Page 13, lines 15, 17, 19, and 21, "mean" has been made plural.

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Page 13, after line 21, --Fig. 26 is a cross-sectional view of a diffusor grill downstream of

a, fan in a ceiling duct, the diffusor grill having a filter spaced therefrom by fastening means of the invention attached to an intermediate hanger bracket. --, has been inserted.

Page 20, lines 12, 16, and 18, "mean" has been made plural.

Page 21, last line, "mean" has been made plural.

Page 23, lines 13(twice), 17, and 20, "mean" has been made plural.

Page 24, lines 7, 9, 12, and 25, "mean" has been made plural.

Page 24, line 15, "half equal quantity" has been replaced by --equal halves--.

Page 24, lines 16 and 17, "half" has been replaced by --halves--.

Page 24, line 19, "velcro" has been replaced by --Velcro--.

Page 25, line 3, "Beside, this joint provide such a simpler" has been replaced by --This joint provides a simple--.

Page 25, lines 4, 9, 12, and 13, "mean" has been made plural.

Page 25, line 6, "clean" has been changed to --cleaning--.

Page 25, line 9, "figures" has been replaced by --Figures--.

Page 26, lines 2 and 15, "mean" has been made plural.

Page 35, lines 1 and 18, "mean" has been made plural.

Page 38, lines 9, and 16-18, "mean" has been made plural.

Page 39, line 7, "mean" has been made plural.

Page 40, line 5, "mean" has been made plural.

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The Abstract as originally submitted by applicant is too long since it exceeds the limits set by the printing contractor used by the USPTO to print U.S. patents. Accordingly, applicant's abstract has been amended to read as follows:

~~~~~ABSTRACT OF THE DISCLOSURE

An air filter designed to be placed at a definite distance L beyond the periphery of the primary airflow which is created by an operating fan, and attached to a stationary element of the fan or to a stationary element of an enclosed space with fasteners which are, at the same time, vibration isolation units. The present invention greatly reduces the creation and release of fine particles of soot, mold, dust mites, etc. Five modifications of the invention are described, as well as the way to determine a distance L when the fasteners are used with ceiling fans, diffusors and other conventional fans. When an operating fan with a weighted base is used, the base acts as an additional vibration dampening unit, which further limits creation of fine toxic particles.~~~~~

In the Claims:

Upon review of the claims as originally filed by applicant with respect to the prior art and the manner in which the claims are recited relative to their clarity and distinctness, the original claims have been cancelled in favor of the following new claims. Applicant should note that every effort has been made to preserve the precise scope of the originally filed claims in the new claims, with the only changes being made in an effort to clearly and distinctly claim applicant's invention.

Claims 1-13 have been cancelled.

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The following new claims have been added, each new claim corresponding in scope to the claims as originally filed by applicant.

| ~~1~~ In combination a fan air filter with an operating fan and fastening means for fastening the air filter to the operating fan, said fan filter with operating fan comprising: an operating fan having a base, a protective cage with bars and guard rings, blades, a drive motor to create a primary airflow within an enclosed space, an elongated stand member secured to said motor at one end, and to the base at the other end; a filter media having a width H measured in direction parallel to a primary airflow axis, said filter media being placed at distance L beyond the periphery of said fan blades, L being measured perpendicularly to the primary air-flow axis, where L is not less than 0.26(H); at least one loop-threaded sheet or hook-threaded sheet secured to a surface of said filter media;

A3  
each said fastening means comprising: a hook-threaded sheet or loop-threaded sheet secured to a stop zone end of an elongated strap member, said stop zone end including an enlarged head portion having a rectangular slot with at least one tooth shaped stop means; said elongated strap member having an elongated strap portion extending from the stop zone end, said elongated strap portion having a free end opposite the stop zone end, the elongated strap portion having a plurality of equally spaced stop elements on at least one side thereof, said tooth shaped stop means serving to engage one of the plurality of stop elements arresting said strap portion when the strap portion is extended through said rectangular slot after said strap portion is attached or wrapped around either a stationary element of the enclosed space or to a stationary

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element of said fan; said elongated strap member further including a tail portion on a free end of said elongated strap portion to facilitate easy initial insertion of said elongated strap portion into the rectangular slot of said enlarged head portion.

~~7~~ 15. The fan filter with fastening means according to claim ~~14~~<sup>1</sup>, wherein the hook-threaded sheet or loop-threaded sheet, enlarged head portion, elongated strap and tail portions, are injection molded as a one piece unit from plastic material.

~~3~~ 16. The fan filter with fastening means according to claim ~~14~~<sup>1</sup>, wherein the filter media includes activated carbon either alone or in combination with a bacteriostatic media.

*A3*  
cont. 17. The fan filter with operating fan and fastening means according to claim ~~14~~<sup>1</sup>, wherein said air filter is attached, by said fastening means to said base of said operating fan for the purpose of reducing vibration of the fan filter.

~~5~~ 18. The fan filter with operating fan and fastening means according to claim ~~14~~<sup>1</sup>, wherein said operating fan has a weighted base; the weight and said base are attached together and become said stationary element of the fan to which said fan filter is attached by said fastening means; the weighted base acting as an additional vibration dampening and vibration isolation unit.

~~6~~ 19. The fan filter with operating fan and fastening means according to claim ~~14~~<sup>1</sup>, wherein said operating fan includes an additional elongated stand member and an additional ring; one end of said elongated stand member is attached to said fan base, and other end is attached to said ring; said ring being an additional stationary element of said fan; said fan filter is attached to said

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additional stationary element by said fastening means for purpose of reducing vibration of the filter.

7 ~~20~~ The fan filter with operating fan and fastening means according to claim ~~14~~, wherein said hook-threaded sheet or loop-threaded sheet from said fastening means has a mushroom-shaped form.

8 ~~20~~ In combination a fan air filter with operating fan and fastening means for fastening the air filter to the operating fan; said fan filter with operating fan comprising: an operating fan having a base, a protective cage with bars and guard rings, blades, a drive motor to create a primary airflow within an enclosed space, an elongated stand member secured to said motor at one end, and to the base at the other end; a filter media having a width H measured in direction parallel to a primary airflow axis, said filter media being placed at distance L beyond the periphery of said fan blades, L being measured perpendicularly to the primary airflow axis, where L is not less than 0.26(H); at least one loop-threaded sheet or hook-threaded sheet secured to a surface of said filter media;

    said each fastening mean comprising: a hook-threaded sheet or loop-threaded sheet including a hook-threaded surface portion or a loop-threaded surface portion and a knitted back portion, each said hook-threaded sheet or loop threaded sheet being folded into two equal halves and wrapped around a respective guard ring in a direction perpendicular to the primary airflow axis such that the two equal hook-threaded or loop-threaded surface portion halves face out and the two equal knitted surface portion halves face inward toward one another, said two equal

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knitted surface portion halves being attached together with one of elastic bonding adhesive, staples or hook and loop fasteners, said loop-threaded sheet or hook-threaded sheet from said filter media and a hook-threaded sheet or loop-threaded sheet from said fastening means when pressed together serving to secure said filter media to the operating fan and to isolate said fan filter from vibrations of the operating fan.

*22.9* In combination a fan air filter with an operating ceiling fan attached to a ceiling and fastening means for fastening the air filter to the operating fan; said fan filter with operating ceiling fan comprising: an operating ceiling fan having a tubular conduit, motor with rotatable blades extending radially to create a primary airflow within an enclosed space, a filter media having a width H measured in direction parallel to a primary airflow axis, said filter media being placed at distance L beyond the periphery of said fan blades and above said operating ceiling fan at distance P of approximately 3 to 5 centimeters, L being measured perpendicularly to the primary airflow axis, where L is not less than 0.26(H+P); at least one loop-threaded sheet or hook-threaded sheet secured to the exterior surface of said fan filter;

*A3*  
cont.

said each fastening means comprising: a hook-threaded sheet or loop-threaded sheet secured to a stop zone end of an elongated strap member, said stop zone end including an enlarged head portion having a rectangular slot with at least one tooth shaped stop means; said elongated strap member having an elongated strap portion extending from the stop zone end, said elongated strap portion having a free end opposite the stop zone end, the elongated strap portion having a plurality of equally spaced stop elements on at least one side thereof, said tooth shaped

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stop means serving to engage one of the plurality of stop elements arresting said strap portion when the strap portion is extended through said rectangular slot after said strap portion is attached to a hanger bracket attached to the ceiling, said hanger bracket having at least one elongated stand member and one ring, said at least one elongated stand member being attached to ceiling at one end and to said ring at the other end; said elongated strap member further including a tail portion on a free end of said elongated strap portion to facilitate initial insertion of said elongated strap portion into the rectangular slot of said enlarged head portion.

*A<sub>3</sub>*  
*cont.*

~~23~~ <sup>10</sup> In combination a fan air filter with an operating fan and fastening means for fastening the air filter to the operating fan; said fan filter with operating fan comprising: an operating fan having a base and guard rings, blades, a drive motor to create a primary airflow within an enclosed space, an elongated stand member secured to said motor at one end, and to the base at the other end; a fan filter media having a rectangular slot for passage of fastening means therethrough, said filter media having a width H measured in direction parallel to a primary airflow axis, said filter media being placed at distance L beyond the periphery of said blades, L being measured perpendicularly to the primary airflow axis, where L is not less than 0.26(H), said filter media further including a cover and hook-threaded sheet or loop-threaded sheet having a rectangular slot therethrough attached on an exterior surface of the filter media;

each said fastening means comprising: a strap and a foam cushion to dampen vibration, said strap including an enlarged flexible plastic head portion having a rectangular slot, an elongated flexible plastic part, and a hook-threaded sheet portion or a loop-threaded sheet portion attached to

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said elongated part, said cushion having a slot extending from its outer periphery to its central area to permit said cushion to be slipped over said guard rings, said filter media being attached to the operating fan by passage of said strap around the cushion and guard rings and through the rectangular slot in the enlarged head portion, said hook-threaded sheet portion or a loop-threaded sheet portion attached to said elongated part of said strap mating with the hook-threaded sheet or loop-threaded sheet having the rectangular slot therethrough which is attached on the exterior surface of the filter media.

*A<sub>3</sub>*  
~~24~~ 11 In combination a fan filter with a ceiling diffusor, an operating fan and fastening means for fastening the air filter to a hanger bracket, the hanger bracket being attached to the ceiling adjacent to the ceiling diffusor; said fan filter with diffusor and operating fan comprising: an operating fan having blades with a drive motor to create a primary airflow passing through a diffusor outlet within an enclosed space, an elongated stand member secured to said motor at one end and to an interior surface of a duct at the other end; said duct attached to a source of air at one end and to said diffusor outlet at the other end, said diffusor outlet having inclined vanes from which air flows out at angle relative to the primary airflow; a fan filter media having a width H measured in direction parallel to a primary airflow axis, and at least one loop-threaded sheet or hook-threaded sheet secured to a surface of said fan filter;

each said fastening means comprising: a hook-threaded sheet or loop-threaded sheet secured to a stop zone end of an elongated strap member, said stop zone end including an enlarged head portion having a rectangular slot with at least one tooth shaped stop means; said elongated

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strap member having an elongated strap portion extending from the stop zone end, said elongated strap portion having a free end opposite the stop zone end, the elongated strap portion having a plurality of equally spaced stop elements on at least one side thereof, said tooth shaped stop means serving to engage one of the plurality of stop elements arresting said strap portion when the strap portion is extended through said rectangular slot after said strap portion is attached to said hanger bracket having at least one elongated stand member and one ring; said at least one elongated stand member being attached to said ceiling at one end and to said ring at the other end; said elongated strap member further including a tail portion on a free end of said elongated strap portion to facilitate initial insertion of said elongated strap portion into the rectangular slot of said enlarged head portion;

*A3*  
*cont.*

an interior surface of said fan filter being placed at distance L beyond the perimeter of a lower part of said ceiling diffusor outlet and being mounted at distance h below the outlet, distance L being measured perpendicularly to the axis of primary airflow, where L is not less than determined by the following equation:

$$L \geq 0.26(h+H) + \tan S(h+H),$$

where h is the distance between the diffusor outlet and the top of the fan filter, H is the width of the fan filter, t is the angle of the air flow expansion, and S is the angle between the inclined surface of vanes of the diffusor and vertical; said loop-threaded sheet or hook-threaded sheet on the surface of the fan filter and said hook-threaded sheet or loop-threaded sheet on the fastening means, when pressed together serve to secure said fan filter and isolate said fan filter from vibration.

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Applicant should note that any language that has been left out of the new claims from that which was present in the originally filed claims has been left out due to either the lack of a clear enabling disclosure of such in the originally filed application papers, or simply because such language would unduly limit applicant's coverage.

3. The following is an examiner's statement of reasons for allowance:

The prior art of record fails to disclose or suggest the specific placement of the fan filter with respect to the fan assembly so as to minimize vibration of the fan filter, the connection of the fan filter to the fan assembly being by various constructions utilizing hook and loop fastening means, the connection constructions not being taught or suggested by any of the prior art, whether taken alone or in combination.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Scott Bushey whose telephone number is (703) 308-3581.

csb

C. SCOTT BUSHEY  
PRIMARY EXAMINER  
GROUP 1300

November 12, 1998

  
11-12-98